Development of Individual Farming in Georgia: Descriptive Analysis and Comparisons

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2005

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Summary

The purpose of this paper is to examine the situation of individual farms in Georgia using a survey conducted in 2003, in comparison to a similar survey conducted in 1996. The basic issue investigated is the progress of the land individualization process, and the consequences of this process for the development of the agricultural sector, and more generally for the well-being of farm families and rural poverty.

We found significant changes in the farm sector. In particular, average landholdings have increased, mainly through leasing of plots. There is more specialization, with some farmers not producing at all and others expanding. Profits and income have deteriorated markedly, and many producers did not even sell their produce on the market. Those producers who leased land were much more likely to sell their produce on the market and they also had higher incomes and relied less on off-farm income and social assistance payments. Still, fewer than 15% of the farmers lease land. While the average age of the population has increased, the level of schooling declined. This indicates a possible "brain drain" process of selective out-migration. Another worrying implication of the income situation is the increase in the incidence of child labor.

These findings indicate that the potential of increased land transactions is still there, and a continuing specialization process that will enable successful farmers to acquire more land could improve the economic well-being of farm families even in a period of depressed produce prices.

Published in ***Privatization, liberalization, and the emergence of private farms in Georgia and other former Soviet countries*****,** J. Gogodze and A.Kimhi, eds.; Tbilisi, Georgia: Color Publishing House, 2005, p. 9-38.

We wish to thank Zvi Lerman for his guidance and advice. The research was supported under Grant No. TA-MOU-01-CA21-042 U.S.-Israel Cooperative Development Research Program, Economic Growth, U.S. Agency for International Development.

Introduction

In this paper we examine the situation of individual farms in Georgia using a survey conducted in 2003, compared to a baseline 1996 survey reported by Lerman (1996). The motivation is the slow progress of the land individualization process reported by Lerman (1996) and subsequent reports by FAO (1999) and Shuker (2000). We focus on the consequences of this process for the development of the agricultural sector, and more generally for the well-being of farm families and rural poverty. This paper is descriptive in nature and serves to motivate further research.

This report is based on a survey of Georgian small-farm households conducted in March-April 2003 in four "raions" (regions): Mtskheta, Dusheti, Sagarejo and Gardabany; 630 households in each raion (2,520 total). It was designed in a form corresponding to a previous survey of 1946 households, conducted in the same raions in April-May 1996. In order to facilitate assessment of variations between the two periods, the descriptive analysis in the current report follows the structure of Lerman's (1996) report and provides comparisons where available. Accordingly, the survey questionnaire included several parts: household profile; land resources and land tenure; farm production; sale of farm products; purchase of farm inputs; farm labor; finances and credit; rural social aspects. Each of these will be reported in a different section.

Section 1. Profile of Households

The 2003 survey encompassed 2,520 households including a total of 10,080 family members. Similar to 1996, a typical family includes 3-5 members with an average of 4.0 persons. Table 1.1 presents the distribution of family size and of the relationships to the head of the household. A comparison of the distribution of age among children, youth, adults and seniors between the 2003 survey and the one in 1996 (Table 1.2) shows that the population has become older – the percent of seniors has grown by more than 6% on the expense of the other age groups. The average age of the seniors has also increased from 67 years in 1996 to 69, where the percent of seniors above 70 has doubled from 4% to 8%. The average age of the adults, however, remained 36 years. The fraction of males is 52 among the ages of 18 and below, 48 in the adults group, 45 among the seniors and 43 in the ages above 70. This indicates that, although the average age of seniors is 69 in both genders, women enjoy a higher life expectancy.

Table 1.1 - Distribution of family size and of the relationship to the head of the household

Number of persons	Percent of households	Relationship to the head of the household	Percent of persons
1	6.94	Household head	25.40
2	12.02	Spouse	18.19
3	21.11	Son / Daughter	34.58
4	23.06	Son-in-law / Daughter-in-law	6.40
5	18.33	Grandson / Granddaughter	13.32
6	11.75	Parent of head / Spouse	0.99
7	4.29	Brother / Sister	0.81
8	1.59	Other relatives	0.28
9	0.63	Unrelated	0.02

Table 1.2 – Age distribution

	Percent	
Age group	1996	2003
Children (under 12)	15.3	12.9
Youth (between 12 and 18)	11.5	10.8
Adults (between 18 and 60)	59.5	56.4
Seniors (60 and older)	13.6	19.9

There are no significant gender differences in educational attainment. Table 1.3 shows that the rate of adults (18-60) having higher or technical education has declined by more than 15% from 1996 to 2003. This could indicate out-migration of higher educated persons, leaving the farming activities to the less educated family members. This is supported by the fact that educational attainment is higher for younger cohorts.

Table 1.3 – Adults' and seniors' education level (%)

	Adults		Seniors	
Education level	1996	2003	1996	2003
Higher education	35.2	23.5	12.5	9.2
Technical	31.4	27.0	18.1	15.8
Other	33.4	49.5	69.4	74.9

Looking at the primary activity of adult household members, we find that about half of them work mainly in the house and the family farm. Some 30% of them work outside, 10% are students and 6% do not work. Seniors (age 60+) are officially retired; however, similar to 1996, 95% of them work, and 10% are working off-farm. 74% of the children 12 years old and under are students; for 15% of them, work was marked as their main activity. This is in contrast to 1996, when in general children did not work. Among the youth, 75% are students and almost all the others work. Time-allocation among activities changes with age and gender. Figure 1.1 shows the allocation of time of an average male and female by age. Overall, women spend more time in household and farm activities; however, males devote more time to farm activities. Males spend more time doing hired work in other farms and in self-employment non-farming activities; there is no considerable gender difference in the time spent in hired non-agricultural work.

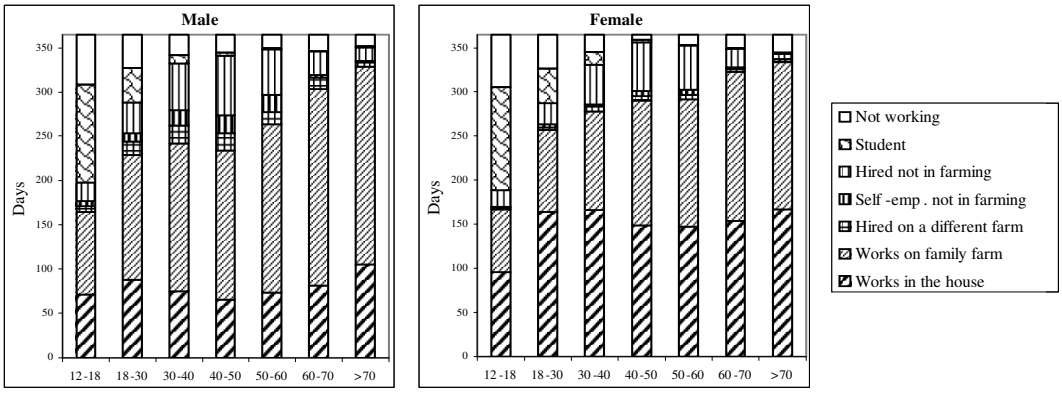

Figure 1.1 – Variation with age of annual time allocation of average male and female

Table 1.4 shows that the formation of individual farms and/or intergenerational farm succession is continuing beyond 1996. 7% of respondents indicated starting their independent activity after 1996.

Table 1.4 – Period of becoming an independent farmer (% of respondents)

	1996	2003
Before 1992 (landmark resolution)	50.27	27.31
1992-1996	49.73	65.95
1996-2003	-	6.96

18% of Georgian farms are operated by more than one family compared to about 6% in 1996. As indicated by Lerman (1996), this cooperation is probably among parents and their married children's families.

The typical family head is a male (75% of respondents relative to 64% in 1996), 56 years old (relative to 44 in 1996), with complete high school or technical education (75% of respondents). 52% of household heads are seniors (compared to 40% in 1996) with an average age of 70 (68 in 1996). An average family head works 53% of the year on the farm, 25% in the house, 6% in other farms or non-farming family business and 10% for wage in non-farming activities.

About 50% of respondents have worked in a collective farm before becoming independent farmers, 25% in industrial enterprises, 12% in social or administration spheres and 9% have served in he army. 70% of the respondents were qualified or unqualified workers in their previously held jobs and 22% were managers or professional specialists; the rest were mostly social sphere employees.

2. Family Income

Farm production has become a more significant source of income since 1996. Figure 2.1 shows that while in 1996 only 10% of the respondents said that agricultural income constitutes over 75% of their family income, this fraction rose to over 30% in 2003. This is a sign that a specialization process has begun: more farms are becoming agricultural-dependent economic units.

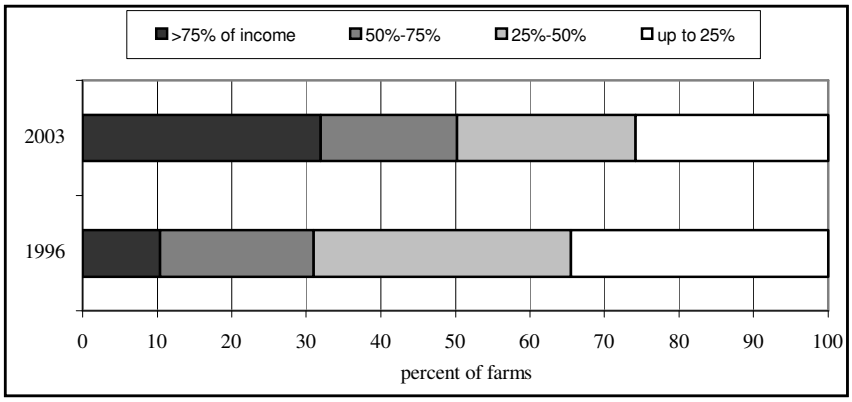

Figure 2.1 – Respondents' evaluations of agricultural-income portion in their total income.

Figure 2.2 shows the shares of income sources of an average household in 2003. About 43% of the income is from farm sources, 26.5% from salaries and wages from off-farm sources, and 8.7% from non-farming businesses. The rest, 22 percents of the income, come from social public support and private sources. This substantial external aid can be explained by both the increasing rate of seniors in the farmers' population and the fact that relying on agriculture as the main income source has become much more difficult since 1996; however, it is obvious that off-farm income is still the major source of income for the average family.

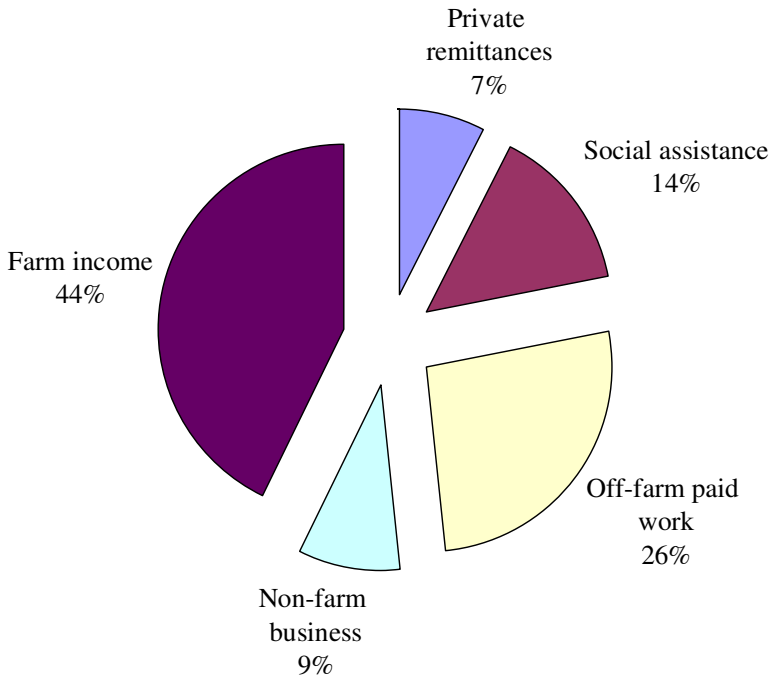

Figure 2.2 – Distribution of income-sources' shares

3. Land Holding and Land Tenure

Figure 3.1 portrays the changes in farm-size distribution and 1996's. Farms are larger in 2003 than in 1996. This is attributed mainly to a significant increase in the amount of leased land. While the size of land owned by a typical farm has grown from 0.74 ha in 1996 to 0.81 ha in 2003, an average farm rents about 0.77 ha in 2003 relative to only 0.16 ha in 1996. The share of leasing-land farms in 2003 is 12% relative to 2% in 1996. On average, a farm that rents land owns 0.66 ha (0.85 ha in 1996), while a non-leasing one owns 0.84 ha (0.73 ha in 1996). Note that compared to 0.5% in 1996, 4% of the farms do not own private land at all in 2003; of which, 3% lease land with an average size of 9.8 ha. This may be responsible for some of the observed change in the landholding distribution but not for all of it.

The aforementioned trends are not spatially homogeneous (Table 3.1). Most of the increase in rented land has occurred in the regions Gardabani and Sagarejo, while there was no change in Dusheti and even reduction in Matskheta; in the latter the reduction was compensated by an increase in the average private land-size.

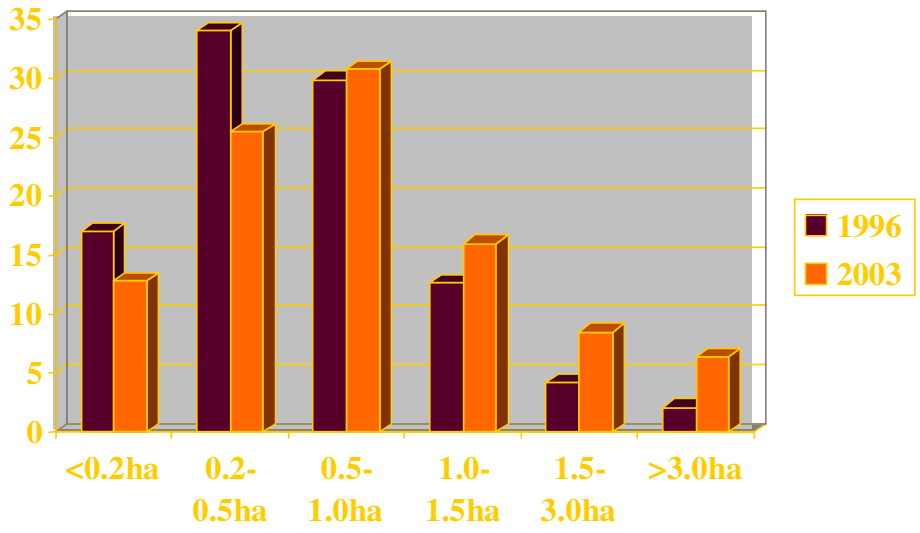

Figure 3.1 – Distribution of farms size (ha)

Table 3.1 – Spatial size distribution of an average farm (ha)

	Total		Private		Leased	
	1996	2003	1996	2003	1996	2003
All sample	0.90	1.59	0.74	0.81	0.16	0.77
Gardabani	0.71	2.23	0.45	0.62	0.26	1.61
Mtskheta	0.76	0.86	0.53	0.80	0.23	0.05
Dusheti	1.02	1.01	1.02	0.99	0.00	0.01
Sagarejo	1.11	2.26	0.94	0.84	0.16	1.41

An average farm operates 2.4 parcels in 2003, where 62% of the farms treat up to 2 parcels (Table 3.2). This is a reduction of 12% relative to 1996, indicating that farmers today till a larger number of plots.

Table 3.2 - Distribution of number of parcels per farm (% of farms)

Number of parcels	Total		Private		Leased	
	1996	2003	1996	2003	1996	2003
0	0.4	1.0	0.39	3.4	97.9	87.4
1	31.3	24.8	30.4	28.7	1.6	9.3
2	42.7	36.0	43.3	32.3	0.3	2.1
3	19.0	22.7	19.27	21.5	0.2	1.2
4	4.2	9.3	4.26	8.5	0.1	0.0
5	1.0	3.1	1.05	2.8	0.0	0.0
6	0.7	2.0	0.72	1.9	0.0	0.0
7	0.2	0.8	0.22	0.8	0.0	0.0

The average plot-size is 0.67 ha in 2003, where the areas of private and leased plots are 0.37 ha and 4.71 ha, respectively. The average distance from the household's

home to his plots is 1.25 km, where the maximum reported distance is 25 km. The average distance to a leased plot is much longer – 3.7 km. In per-hectare terms, a typical farmer lives 1.5 km from one hectare of his private lands and 4.0 km from a hectare he leases. Larger private plots are located farther: an increase by a hectare in the size of a private plot increases the distance to this plot by 239 meters. This feature is minor in the case of leased plots – the (statistically significant) increase is 20 meters per hectare.

There has been an increase in the leasing term between 1996 and 2003; only 23% of lessees rent a parcel for up to one year in 2003 relative to more than 50% in 1996. 33% of the plots are leased for periods of 1-5 years in 2003 versus 16% in 1996. Leasing for periods of 5 years and more has increased from about one third in 1996 to 44% in 2003.

The source of about half the private and lease plots in 2003 is the village authorities (Table 3.3). 27% of the private parcels were inherited, where 37% of the leased land is from agricultural enterprises.

Table 3.3 – Sources of land

	Percent of total holdings in an average farm				Percent of parcels in 2003	
	Private		Leased			
	1996	2003	1996	2003	Private	Leased
Regional authorities	15	6	75	50	5	12
Village authorities	73	63	19	32	54	47
Agricultural enterprise	9	15	2	17	13	37
Other organizations	1	0	4	0	0	0
Inherited	na	15	na	0	27	0
Private person	2	1	0	1	2	4

Table 3.4 shows the uses of land in an average farm. The main difference between 1996 and 2003 is in the leased lands: the portions of hay meadows and pasture have increased on the expense of other uses; these changes are attributed to the increase in the leased agricultural areas in Gardabani and Sagarejo regions.

Table 3.4 – Uses of land (percent of total land)

	All sample		Leased lands		Private lands	
	1996	2003	1996	2003	1996	2003
Arable	67	59	83	57	63	62
Orchards	8	5	6	0	9	11
Grapes	13	6	5	0	14	13
Hay meadows	8	15	3	16	10	13
Pasture	3	15	3	26	3	1
Other	1	0	0	0	1	1

44% of the agricultural parcels are at least partly irrigated in 2003(Table 3.5). The percentage of leased irrigated plots is higher, 55%, mainly because of the high portion of irrigated parcels in Sagarejo region.

Only 1.7% of the respondents report they are leasing out land. Note that this is approximately corresponding to the percentage of households that lease from private persons - about 1% (Table 3.3). The average size of the leased out land is 3.2 ha and

the leasing term is up to 3 years in 80% of the cases. A wide range of answers was given to the question: "how much do you get in rent per year per hectare of leased land?" about half mentioned 2 lari/ha per year, all of them in Sagarejo, and the others indicated payments of 20-500 lari/ha per year.

Table 3.5 – Percentage of irrigated land in 2003

	Private lands		Leased lands		All lands	
	Irrigated	Not irrigated	Irrigated	Not irrigated	Irrigated	Not irrigated
All regions	44	56	55	45	44	56
Matskheta	54	46	30	70	54	46
Dusheti	21	79	33	67	21	79
Sagarejo	47	53	60	40	49	51
Gardabani	60	40	37	63	59	41

There is an interesting change in farmers' attitudes toward increasing their land size. In 1996, farmers' statements were more decisive: 52% were in favour of an increase, 40% were against it, and 8% were not sure. In 2003, farmers show a more hesitative behaviour: 41% are in favour of an increase, one percent does not want additional land, and 58% are not sure. This might indicate that households have internalised the uncertainty associated with a capitalistic economy, and also reflects the poor farm earnings in 2003.

Compared to 65% in 1996, 80% of the respondents denote full private as the favoured form of ownership in 2003; 12% indicate permanent use as the preferred status compared to 26% in 1996. Farmers are more open to land transactions in 2003. 66% are in favour of the law that allows for buying and selling of land, compared to only 24% in 1996. This might be evidence for a relief in the sentiment against buy-and-sell transactions, attributed by Lerman (1996) to the concern about speculations and accumulation of land in the hands of few wealthy persons.

70% of the 2003 respondents report possessing any official document certifying ownership; this is an increase of more than 30% relative to 1996. Half of those who hold ownership certificates have paid for them. The payment (including notary) varies between 0.02 lari to 520 lari, where on average farmers have paid 37 lari (12 lari in 1996). 6% (12% in 1996) of those without official documents declare that they didn't want to pay for them, 28% (40%) blame the authorities and 65% (48%) fail to name the reason. On average both those who own documents and those who don't are willing to pay 9 lari for official titles. This is a reduction relative to 1996, where the average willingness to pay was 15 lari.

Nearly half the respondents have paid land taxes in 2002; the same as 1995. The average payment of those who did pay is 52 lari per ha (30 in 1996), however, the payments vary in a range of 0.8 - 750 lari/ha.

Payment for rented land is by money; only 2% report a payment by a share of the output (barter). The average annual rent is 60 lari/ha, where rentals vary in a range of 2 – 600 lari/ha.

In general farmers do not cooperate with each other; however, there is an increase in cooperation from 0.5% of the farmers in 1996 to 7% in 2003. The most common joint activity is selling of farm products.

4. Farm Production

Almost all farmers are engaged in crop production; however, the number of crops grown by each farm has declined on average. Figure 4.1 presents the distribution of the average number of crops, showing a decrease in the percent of farms growing 3-6 crops and increase in those who grow 0-2 crops. The average number of crops is 3.1 in 2003 versus 3.6 in 1996. Hence, although farmers do not completely specialize, there is a slow trend of specialization.

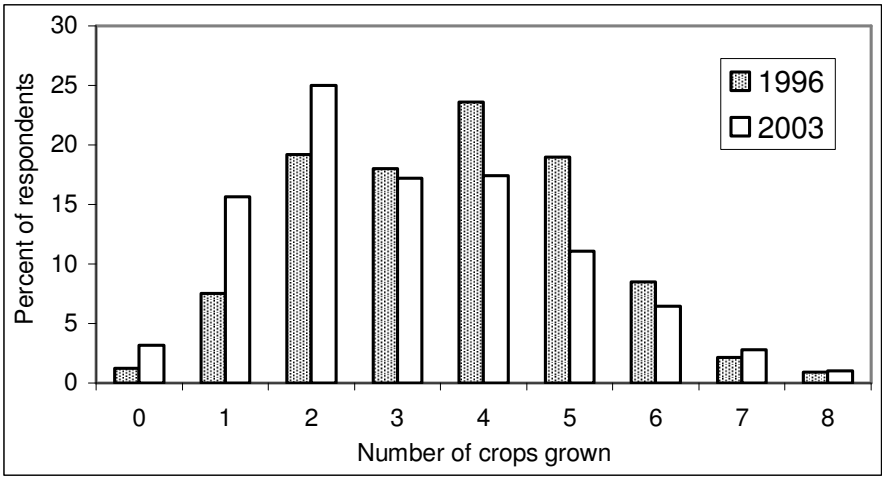

Figure 4.1 – Frequency of number of crops grown by a farm

Cropping patterns are shown in Table 4.1. Among the field crops, farmers tend to grow less corn and beans and more wheat and barley in 2003, compared to 1996. Fewer farmers are growing garden crops such as potato, fruit and grapes, while vegetable growing has slightly increased. Hay growing has become significantly more popular among farmers. Land allocation patterns reveal a considerable increase in the portion devoted to wheat and barley. This increase is not on the expense of other crops; it is attributed to the increase in the size of the farms. As can be seen in the last two columns of Table 4.1, only the area devoted to beans has declined, while the size of wheat and barley is four times larger in 2003 than in 1996, and that of hay has doubled. The main changes have occurred in Gardabani and Sagarejo regions, where the average farm size has sharply increased (see Table 3.1).

Table 4.2 presents the average plot sown for each crop by farmers who grow it, the average output and the typical per-hectare yield. Considering the aforementioned increase in the total area devoted to wheat and barley, this increase is explained by both the increase in land allocated to these crops and the increase in the portion of farmers that choose to grow these crops. In contrast, there is a reduction in the size of plots devoted to hay; hence, the increase in the total land devoted to hay is attributed to the increase in the percent of farmers that grow this crop.

Between 1996 and 2003, per-hectare yields of several crops, including wheat, barley, sunflowers, potatoes, fruits and grapes, have decreased, in some cases quite substantially. Other crops, including vegetables, melons and hay, experienced increases in yields.

Table 4.1 – Percents of farms growing each crop, land allocation among crops, and areas of crops in an average farm

	Portion of farms		Portion of land		Average area (ha)	
Crop	1996	2003	1996	2003	1996	2003
Wheat	20	26	13	30	0.12	0.47
Barley	6	9	4	8	0.03	0.12
Corn	62	32	16	10	0.14	0.17
Beans	42	24	8	3	0.07	0.04
Sunflower	5	4	5	5	0.05	0.08
Potato	55	47	9	5	0.08	0.08
Vegetables	60	63	11	8	0.10	0.13
Melon	11	15	1	2	0.01	0.03
Fruit	42	30	7	4	0.06	0.06
Grapes	47	32	13	8	0.11	0.12
Hay	9	25	13	16	0.12	0.25
Other	2	4	1	2	0.01	0.03

Table 4.2 – Cultivated area, output and per-hectare crop yields

	Average cultivated area per farm (ha)		Average output per farm (kg)		Average yield per hectare (kg/ha)	
Crop	1996	2003	1996	2003	1996	2003
Wheat	0.67	1.21	1,244	1,642	1,859	1,352
Barley	0.56	0.88	1,390	1,183	2,474	1,352
Corn	0.26	0.34	698	891	2,657	2,615
Beans	0.19	0.11	147	94	785	815
Sunflower	1.07	1.40	1,072	924	1,004	659
Potato	0.17	0.11	740	442	4,419	4,032
Vegetables	0.20	0.14	567	557	2,878	4,032
Melon	0.11	0.12	537	768	5,061	6,458
Fruit	0.16	0.14	640	287	3,979	2,084
Grapes	0.28	0.26	1,179	387	4,236	1,479
Hay	1.47	0.68	1,819	1,350	1,240	1,996

Farmers were asked to list the crops they intend to increase the portion of land devoted to, on the expense of other crops (Table 4.3). Among those who grow the respective crops, in most cases there were equal fractions of farmers intending to increase and decrease the land portion; exceptions are potato and grapes, in which there is about 20% more farms that are in favour of increasing land portions. Logistic regressions revealed that the intention to increase the land devoted to wheat and corn is significantly related to the size of these plots, whereas plans to increase vegetable production are associated with higher per-hectare yield.

Overall, 80% of the respondents are engaged in animal breeding in 2003; only 2% do not grow crops and specialize completely in livestock. One third of those who do not breed animals blame this on insufficient land, 20% attribute it to difficulties with farm inputs and production; the rest simply are not interested or claim lack of feed or profitability. No considerable changes have occurred between 1996 and 2003 with respect to livestock holdings (Table 4.4). An average farmer still keeps two cows and about 15 chickens. Farmers that breed sheep or goats increased their numbers by a factor of 2.5, and those who raise horses have on average one horse in 2003 versus

two in 1996. There are no remarkable changes in livestock production either (Table 4.5). There is was increase of 100 litters in annual milk production per cow, from 762 litters in 1996 to 867 litters in 2003. Still, less than 3% of the farmers report yields higher than 2,000 litters. On the other hand, production of beef and pork has declined.

Table 4.3 – Farmers' intentions with respect to changing the portion of land devoted to each crop on the expense of other crops.

	% of farms that grow the crop		
Crop	Increase	Unchanged	Decrease
Wheat	25	42	33
Barley	22	56	22
Corn	19	65	17
Beans	11	83	6
Sunflower	39	39	22
Potato	23	75	2
Vegetables	15	76	10
Melon	2	94	4
Fruit	7	85	7
Grapes	26	67	7
Hay	10	79	11

Table 4.4 – Percents of livestock breeders and herd size

	Percent of farms		Number of heads per farm*	
Livestock	1996	2003	1996	2003
Bulls	17	12	1.9	1.7
Cows	62	64	2.3	2.1
Heifers	32	25	1.6	1.7
Calves	28	36	1.6	1.6
Pigs	39	28	2.6	2.8
Piglets	18	15	6.0	4.6
Sheep & goats	29	24	14.0	34.8
Horses	4	6	2.4	1.1
Chickens	63	73	13.4	14.6
Other poultry	15	11	7.4	4.6
Rabbits	5	3	6.3	4.8
Bee hives	5	3	8.3	8.5

* Average for a farm breeding the type of animal.

Table 4.5 – Livestock production

	Percent of producers among all farmers		Farm's production (kg/year)	
Product	1996	2003	1996	2003
Beef	28	24	190	166
Pork	41	39	160	119
Mutton	15	12	90	83
Egg	62	68	1037	917
Poultry meat	35	50	35	30
Milk	63	63	1500	1994
Wool	21	12	50	85
Honey	5	2	100	132

Among animal breeders in 2003, 63% produce on their own up to 50% of the hay they use; this is compared to 71% of the breeders in 1996. On the other hand, 28% produce up to 50% of their concentrated fodder, compared to 16% in 1996. 41% of the respondents indicate that they use at least ¼ of the grains they produce for feeding animals; in 1996 only 12% were doing so. Only 55% of farmers that breed livestock in 2003 report that they use communal grassland; this is compared to over 80% in 1996. Only 20% of the animal breeders pay for grazing in 2003, where the payment is commonly according to number of heads of cattle. The most frequent price is 5 lari per head. Renting pasture is rare – about 1% of breeders.

5. Sales of Farm Products

About 72% of farm production in 2003 is for self-consumption (Table 5.1), an increase of 6% over 1996. Moderate increases are seen in most of the products; significant reduction was identified only in the case of hay. There is also an increase in the number of products produced by an average farm, from 3.7 to 5.0.

Table 5.1 – Percentage of output consumed, sold and reserved

	Percentage of producers		Average percent of producers' outputs				
			Consumed		Sold & Reserved		Sold
Product	1996	2003	1996	2003	1996	2003	2003
Grains	49	70	75	72	25	28	14
Sunflower	3	5	63	61	37	39	30
Potato	38	47	71	79	29	21	9
Vegetables	42	66	62	78	38	22	19
Melon	8	20	67	68	33	32	28
Fruit	31	29	64	73	36	27	20
Grapes	32	28	70	81	30	19	13
Hay	15	39	98	82	2	18	7
Meat	45	60	54	65	46	35	30
Eggs	44	64	71	77	29	23	21
Milk	47	61	64	57	36	43	41
Wool	16	11	53	48	47	52	45
Honey	4	2	5	60	95	40	34
Weighted average			66	72	34	28	22

Product prices have significantly declined in real terms between 1996 and 2003, in all products except eggs (Table 5.2). Table 5.3 shows that an average farm has produced 4,421 and 4,103 kg of agricultural products in 1996 and 2003, respectively. The total value of farm products was 4,238 lari and 3,231 lari in 1996 and 2003, respectively (in fixed 2003 prices). This implies that a kg of an average product produced in 1996 worth 0.96 lari compared to 0.76 lari/kg of 2003's average product. This explains the increased tendency for self consumption. Most of the price reduction is in field crops (from 0.72 lari/kg to 0.43 lari/kg), which might rationale the reduction in output by more than 20%. Livestock prices have declined by 12%; however production has increased by 15%, and the portion of the sold products increased by 20%. The calculated value of the sold products in 2003 is 828 lari per farm, on average.

Table 5.2 – Crop production, prices and agricultural production values

	Percent of farms		Average output of farm that produces the product (kg)		Total production per an average farm (kg)		Average price (lari/kg)*		Average farm's Product value (lari)*	
Product	1996	2003	1996	2003	1996	2003	1996	2003	1996	2003
Wheat	20	26	1,244	1,642	249	427	0.6	0.4	149	171
Barley	6	9	1,390	1,183	83	106	0.6	0.4	50	43
Corn	62	32	698	891	433	285	0.6	0.4	260	114
Beans	42	24	147	94	62	23	0.6	0.4	37	9
Sunflower	5	4	1,072	924	54	37	1.1	0.8	59	30
Potato	55	47	740	442	407	208	0.6	0.4	244	83
Vegetables	60	63	567	557	340	351	0.8	0.5	272	175
Melon	11	15	537	768	59	115	0.7	0.5	41	58
Fruit	42	30	640	287	269	86	0.8	0.7	215	60
Grapes	47	32	1,179	387	554	124	1.0	0.8	554	99
Hay	9	25	1,819	1,350	164	338	0.3	0.2	49	68
Beef	28	24	190	166	53	40	4.3	3.7	229	147
Pork	41	39	160	119	66	46	4.3	3.7	282	172
Mutton	15	12	90	83	14	10	4.3	3.7	58	37
Egg	62	68	1,037	917	643	624	0.5	1.8	321	1122
Poultry meat	35	50	35	30	12	15	4.3	3.7	53	56
Milk	63	63	1,500	1,994	945	1,256	1.4	0.6	1,323	754
Wool	21	12	50	85	11	10	3.9	1.7	41	17
Honey	5	2	100	132	5	3	--	6.6	--	17

* In 2003 laris; prices were capitalized according to the consumer price index (1996=100, 2003=153);

Table 5.3 – Agricultural production

		Consumed		Sold/Reserved		Total	
		1996	2003	1996	2003	1996	2003
Production (kg/year)	Crops	1,914	1,584	760	515	2,673	2,099
	Livestock	1,145	1,275	603	729	1,748	2,004
	All products	3,059	2,859	1,362	1,244	4,421	4,103
Average farm's production value (lari)	Crops	1,353	682	578	227	1,931	909
	Livestock	1,432	1,580	875	742	2,307	2,322
	All products	2,785	2,262	1,453	970	4,238	3,231
Average price (lari/kg)	Crops	0.71	0.43	0.76	0.44	0.72	0.43
	Livestock	1.25	1.24	1.45	1.02	1.32	1.16
	All products	0.91	0.79	1.07	0.78	0.96	0.79

As in 1996, selling directly to consumers was the most popular sale channel in 2003 (Table 5.4). This is done mainly in the market and also on the roadside. The exception is hay, in which sales take place mostly in the field or through wholesalers. Wholesalers are the second common channel and they hold considerable shares in marketing grapes and honey. Large governmental and private organizations serve as a relevant channel only in the case of grapes.

Figure 5.1 shows the percentage of farmers indicating various difficulties associated with selling commodities. Although most of the commercial activity is still done in the market, the percentage of respondents reporting problems of late payments has doubled between 1996 and 2003. The fractions of those quoting

difficulties of low prices and finding buyers remain unchanged, while there is a significant reduction in transportation problems. The percentage of farmers that didn't mention any difficulty with sales has increased by more than 10%; this might be attributed to the adoption to a capitalistic economy.

Table 5.4 – Main sales channels in 2003
(percentage of commercial farmers indicating each channel as the main channel)

Product	Number of farms with sales	In the market	On the roadside	In the field or farm	Wholesalers	Large organizations	Other
Grains	517	72.6	5.8	1.4	18.9	1.0	0.4
Sunflower	52	78.9	--	--	21.2	--	--
Potato	209	67.5	17.2	--	15.3	--	--
Vegetables	493	84.0	3.3	--	12.8	--	--
Melon	217	90.3	--	--	9.7	--	--
Fruit	250	90.0	4.4	0.8	4.8	--	--
Grapes	168	58.9	0.6	1.8	26.2	11.3	1.2
Hay	71	19.7	--	25.4	50.7	--	4.2
Meat	644	80.3	4.0	0.3	14.9	0.5	--
Eggs	580	80.3	6.4	0.2	12.2	0.5	0.3
Milk	972	62.6	7.2	12.5	16.5	0.5	0.8
Wool	136	80.2	1.5	8.8	8.1	0.7	0.7
Honey	24	70.8	4.2	--	25.0	--	--
Weighted average		74.4	5.3	3.8	15.2	0.8	0.4

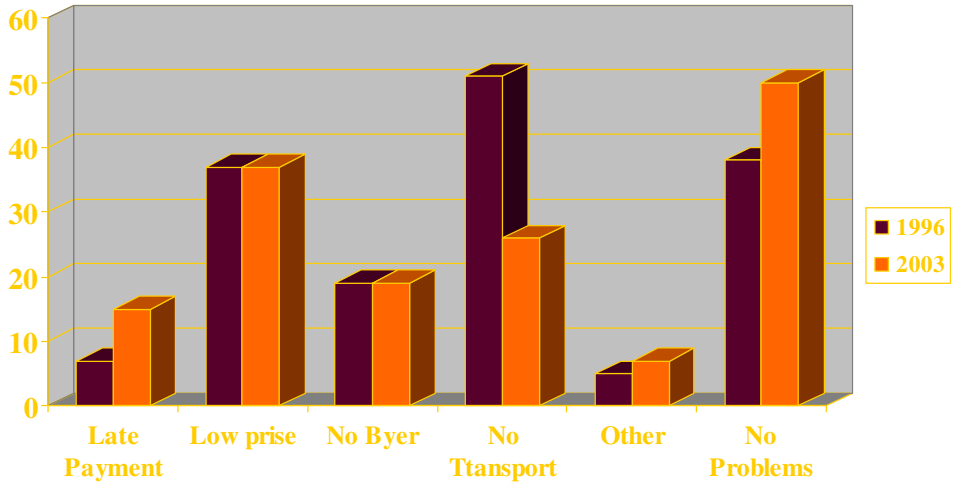

Figure 5.1 – Difficulties with sales of farm products

6. Farm Resources and Inputs

A typical farm employs four workers in 2003 – an increase of 1.3 workers per farm relative to 1996 (Table 6.1). On average two family members work year round, one family member works seasonally and there is one additional hired seasonal worker. The increase in the number of workers is related mostly to the hired labour. About 4.5% of the farms employ hired workers year round and more than 40%

employ hired hands; this is compared to less than 1% in 1996. Farms employing year-round hired labour are relatively large, with an average area of over 3 hectares. 3.7% of the farms employ more than 5 workers during the year; the maximum reported is 100 employees. These farms operate 12 hectares of land on average, among which 9.5 are leased. The average annual cost of hired labor is 72 lari. Considering seasonal workers as employed for 3 months a year, the average wage is 10 lari/month, ranging from 1 to 1000 lari/month.

Table 6.1 – Distribution of farm-workers number (%)

	2003							1996
	Family members	All year Hired workers	Total	Family members	Seasonal Hired workers	Total	Total	Total
0	4.6	95.5	4.4	62.6	56.8	36.2	2.4	5.4
1	20.9	2.9	20.6	14.3	20.4	19.6	6.4	11.3
2	43.1	1.3	41.7	13.7	9.1	16.8	22.9	37.5
3	17.9	0.3	18.0	6.3	8.7	14.4	17.2	21.2
4	9.8	0.0	10.2	2.7	2.1	6.0	19.7	17.9
5	2.6	0.0	3.5	0.4	1.4	3.4	10.3	4.8
6 and more	1.2	0.1	1.6	0.1	1.4	3.7	21.1	1.9
Average number of workers	2.20	0.07	2.27	0.74	1.06	1.80	4.07	2.65

Farmers tend to rent machinery rather than owning it. Table 6.2 shows that renting from private persons is the most common source of access to machinery; state organizations and commercial firms are a secondary source. Joint ownership exists to some extent. More than 60% of the respondents report renting tractors; trucks, ploughs, sowing machines, cultivators and combines are rented by about 30% of the farmers. Some 5% of the farmers hold mini-tractors – a decrease of 10% relative to 1996. As in 1996, milking machines are very rare.

Table 6.2 – Farms machinery usage (% of farms)

	1996	2003			
Machine	Owned by myself or by my family	Owned by myself or by my family	Owned jointly with other farmers	Rented from private individuals	Rented from state organizations or commercial firm
Tractors	2.4	3.3	0.6	53.5	7.1
Mini-tractor	15.4	5.2	0.2	3.9	0.4
Truck	2.9	4.6	0.2	22.3	2.9
Plough	1.7	3.9	0.7	28.6	3.8
Swing machine	1.6	1.0	0.5	23.2	3.5
Hay machine	0.8	0.6	0.2	9.3	1.3
Cultivator	1.1	1.9	1.0	26.8	3.4
Combine/harvester	0.4	0.6	0.2	25.4	2.5
Sprinkler/ sprayer	15.7	0.9	0.1	4.8	0.8
Potato digger	3.1	0.1	0.0	0.2	0.0
Milking machine	0.2	0.1	0.0	0.0	0.0
Other	8.5	0.1	0.0	1.1	0.0

The percentage of farms reporting purchase of inputs has significantly declined, from an average of 25.0% in 1996 to 13.5% in 2003. The decline is observed in all types of inputs except fuel and veterinary medicines and services. This is consistent with the reduction in real farm income (Section 2, Section 5), implying that farmers are forced to rely more on their own resources. As in the case of selling farm products, there are fewer complaints about access difficulties, especially with regards to high prices; the percentage of respondents indicating no problems has increased from 17% in 1996 to 86% in 2003.

Table 6.3 – Input purchase and access difficulties

	Percent of farms that purchase the input		Difficulties in purchasing the input (% of farms)						Expense per farm that purchases the input (lari)
			High prices		Not available		No problems		
Input	1996	2003	1996	2003	1996	2003	1996	2003	2003
Seeds/seedlings	75.0	34.8	26.7	21.5	1.1	12.1	60.5	74.4	111.3
Fodder	47.1	29.0	39.3	22.7	1.3	6.9	29.6	76.5	240.1
Young animals	18.3	4.1	42.7	9.0	1.3	6.6	12.8	90.0	162.8
Organic fertilizer	20.2	4.0	38.0	0.0	4.0	5.0	16.8	94.9	68.0
Mineral fertilizer	27.5	12.9	42.8	14.2	4.7	10.9	17.3	81.8	61.2
Herbicides/insecticides	33.9	15.1	42.5	13.3	3.4	3.6	28.6	84.2	91.7
Farm machinery	14.7	1.7	55.1	6.9	3.1	7.0	8.1	90.6	257.3
Maintenance/repair	9.9	4.1	51.3	3.7	3.5	2.7	5.9	93.9	111.8
Spare parts	13.3	2.8	52.0	6.7	3.4	6.6	7.2	90.8	194.7
Fuel and oils	39.9	43.1	42.8	31.6	2.8	8.5	18.9	65.5	97.8
Machine service	34.5	17.4	44.2	12.6	2.8	3.3	18.3	84.6	102.5
Veterinary medicines	20.0	23.3	45.7	14.5	2.9	4.3	9.7	82.9	32.5
Veterinary services	19.3	19.8	43.1	9.4	2.8	1.9	11.1	89.1	22.0
Construction materials	8.6	2.5	55.3	6.3	2.6	3.1	4.1	91.3	586.3
Construction services	8.2	0.3	52.1	5.0	2.6	2.5	4.1	92.6	241.4
Consulting	9.5	0.2	36.3	3.0	2.0	2.4	14.1	94.6	6.75
Average*	25.0	13.5	44.4	11.3	2.8	5.5	16.7	86.1	241.3**

*Arithmetic average of percentage across all inputs.
** Weighted average; representing the annual expenses of an average farm on input purchase.

Infrastructures in the farm residence have not changed since 1996 (Table 6.4); 75% of the respondents have access to water from a pipe or a well, electricity is available for about 88%, and 87% have access to roads. There is, however, a reduction in the availability of water and electricity in the farm buildings.

Table 6.4 – Percents of farms having infrastructures and communication instruments

	In the house		In the farm building	
Supply	1996	2003	1996	2003
Water	75	75	38	16
Electricity	92	88	52	29
Telephone	-	8	-	2
Cellular phone	-	18	-	-
Roads	86	87	61	58

7. Finance: Investments, Assets, Farm Income, and Credit

Less than 11% of the sampled farms have invested in fixed assets during 2002 (Table 7.1); this is compared to about 99% of the farms in 1995, when private agricultural activity was in its early phase. The average annual investment per investing farm in 2002 was 2,723 lari ($1,245), where investments ranged between 30 and 134,000 lari. Own savings are almost the single source for investment.

Table 7.1 – Investment sources

Source	Percent of farmers with investments		Average investment (lari)		Percent of total investments	
	1995	2002	1995*	2002	1995	2002
Own savings	92.4	10.2	492	2,766	78.4	97.0
Family and friends	19.8	0.4	623	282	21.2	0.4
Commercial institutions	0.0	0.2	0	2,672	0.0	2.2
Other	0.2	0.1	1,403	1,300	0.4	0.4
All sources	98.9	10.6	597	2,723	100.0	100.0

* in terms of 2002 laris.

In 2002, there was a statistically-significant positive dependence of investments on the size of the leased plot, with a coefficient of 105 lari/ha. The revenue from sales of agricultural products, as evaluated by the farmers, also has a positive impact on investments – one additional lari of revenue increases the investment by 0.38 lari. Investments are also correlated with the value of fixed assets, where every additional lari of assets leads to an additional 0.07 lari of investment. On the other hand, an increase of one lari in calculated net-profit reduces investments by 0.56 lari.

The average value of farm assets, including buildings, machinery and equipment, as evaluated by farmers, is nearly 20,000 lari ($9,100), in 2002. In 1996, assets were estimated at 36,000 lari, which are equivalent to 55,000 lari in terms of 2003 prices. Figure 7.1 compares the distributions of assets in the two years in 2003 prices, showing a considerable reduction in assrts from 1996 to 2002.

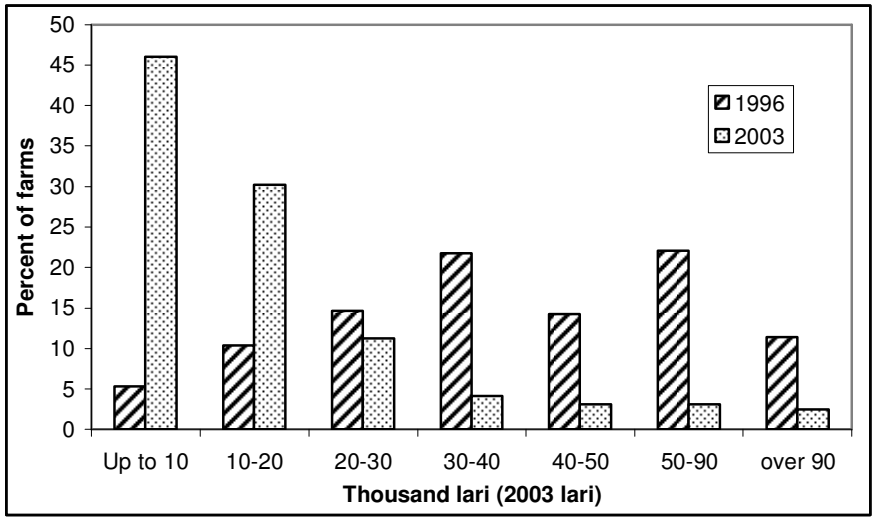

Figure 7.1 - Distribution of values of farm assets

Total income from sales of agricultural products has been 1,217 lari/farm in 2002, on average (Table 7.2). Other farm income sources amounted to 93 lari. Average farm costs, including hired labor (37 lari), purchase of inputs (309 lari), land lease (29 lari), transportation (40 lari), water (12 lari) and taxes (43 lari) totaled 473 lari. Hence, the average net-profit was 837 lari ($383) per farm. This is about 55% of the average profit in 1995 – 1,532 lari (in terms of 2003 lari, capitalized based on the consumer prices index). Profits in Dusheti, Gardabani, Mtskheta and Sagarejo are 1,089, 1,042, 827 and 368 lari, respectively; the most dramatic change has occurred in Sagarejo, where profits have been reduced by 72%.

Table 7.2 – Average farm's sales revenues, costs and profits in 1995 and 2002*

	Sales		Other sources		Costs		Profit	
Region	1995	2002	1995	2002	1995	2002	1995	2002
Dusheti	1,888	1,239	-	113	613	264	1,274	1,089
Gardabani	3,143	1,679	-	119	913	757	2,229	1,042
Mtskheta	2,281	935	-	75	1,163	182	1,118	827
Sagarejo	2,029	940	-	58	719	630	1,309	368
All sample	2,347	1,217	-	93	815	473	1,532	837

* all in 2003 laris

Similar to 1995, farms specializing in animal breeding were significantly more profitable in 2002, with 1,281 lari relative to 537 lari for crop specializing farms. The average profit in mixed farms was 881 lari. Leasing land does not contribute to profitability; an additional leased hectare increases farm income by 70 lari, but increases costs by 210 lari. The average margin of profit on sales (including other farm's resources) has not changed and is about 70%. The average return on assets has increased from 7% to 15%, indicating that the reduction in profits exceeds the decline in assets values. The percentage of farms that reported losses has doubled from 8% in 1995 to 16% in 2002 (Figure 7.2); the fraction of those who earned more than 1000 lari (in 2003 prices) has reduced from 46% to 26%.

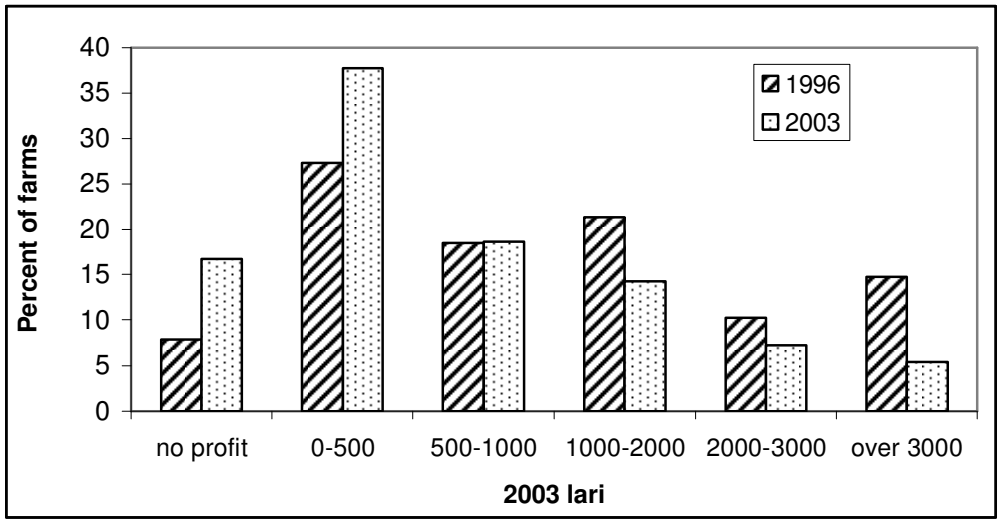

Figure 7.2 – Farms profit distribution (in 2003 lari)

The total income of an average farm-household in 2002 was 1,932 lari ($883), where the Gross Domestic Product (GDP) per capita (purchasing power parity) was $3,023

in Georgia. Farmers, hence, earned 29% of the GDP per capita in 2002, whereas in 1996 their income only from farming activities was $793 (in 1996 dollars) -- 59% of the GDP per capita in that time ($1,350).

3.7% of the respondents have reported loans that were taken during 2002. This implies that borrowing is still very uncommon, although there is a slight increase relative to 1996, when less than 1% of the respondents have reported loans taken in 1995. The fraction of farmers that borrowed from commercial banks is nearly 40% (Table 7.3), where the share of commercial banks is about 50% of the total amount borrowed in both short and long term loans. As expected, interest on loans from friends and relatives is lower in comparison to other sources, were the highest interest is for short term loans from private persons who are not relatives or friends.

Table 7.3 – Loans received in 2002

	Up to 3 months			Longer than 3 months		
Source	Percent of farms	Amount (lari)	Interest (%/month)	Percent of farms	Amount (lari)	Interest (%/month)
Commercial bank	0.7	1,047	3.3	0.8	2,460	3.1
Friends and relatives	0.6	521	0.8	0.5	1,433	0.7
Other private persons	0.5	610	12.5	0.5	2,746	3.8
Other sources	0.0	0	0.0	0.0	600	4.0
All sources	1.9	841	4.3	1.8	2,282	2.7

12% of the farmers (compared to less than 1% in 1996) report other debts, which range between 100 and 26,000 lari and average 1440 lari. 16% of outstanding debt (2% with respect to the whole sample) was borrowed from a bank, where the average outstanding debt is 2000 lari. However, only 0.6% of the respondents (0.5% in 1996) report that they keep money on deposit accounts in the bank; the interest ranges between 1% and 6% per month. 6% of the farmers had to provide security for loans they took, 75% of which put precious metals and stones, while the others mortgaged a house, land, animals or equipment.

2% of the farmers report that other farmers or private people owe them money, which amounts to 1,360 lari on average. Local and state authorities owe to 26% of the farmers; the average debt is 370 lari, where the maximum reported debt is 126,000 lari. 51% claim an average debt of 1,300 lari by other bodies, in a range between 1000 and 400,000 lari. This is a considerable change relative to 1996, when almost no farmer reported debts of others to him.

Farmers' declared credit needs are shown in Table 7.4. As in 1996, nearly 50% of the respondents need credit in 2003. The average amount has declined, but the median amount, the requested period and the interest rate farmers are willing to pay have increased.

Table 7.4 – Declared credit needs

	1996	2003
Percent of farms	51	46
Average amount (lari)*	28,600	13,400
Median amount (lari)*	3,100	5,000
Average period (months)	20	27
Median period (months)	12	24
Average interest rate (%/month)	1.5	6.5
Median interest rate (%/month)	1.0	2.0

* In 2003 lari

According to farmers' responses, the availability of credit has improved between 1996 and 2003 (Table 7.5); relative to 21% in 1996, in 2003 43% of the farmers believe that they can borrow as much as necessary. Only 50% of the farmers experience difficulties in obtaining credit in 2003, compared to nearly 70% in 1996. Table 7.6 reflects an increase in the trust in banks as a potential source for credit for current expenses and capital investments, and a slight reduction in relying on relatives and friends. Yet, the percentage of farmers that have no financial source has not changed.

Table 7.5 – Answers to the question: "can you borrow as much money as necessary?" (percent of respondents)

Answer	1996	2003
Yes	11	19
Yes, but I don't need credit	10	24
No, I can't because the interest is too high	37	35
No, I can't since there is no opportunity to get a loan even with high interest	21	7
Other (specify)	1	0
Difficult to answer	21	16

Table 7.6 - Answers to the question: "in case of necessity, what are the sources from which you could borrow some money for current expenses and capital investments?" (percent of respondents)

	current expenses		capital investments	
Source	1996	2003	1996	2003
Relatives and friends	52	44	31	26.8
Bank	3	19	5	16
Farmer association	0	1	1	0
Processing plants	1	0	0	0
Commercial structures	0	1	2	0
No such source	39	34	57	55
Other	5	1	5	1

Farmers are more willing to mortgage land in order to get credit, in 2003. Table 7.7 shows that those who are in favor of such a law, are also willing to mortgage their own land in order to obtain loans.

Table 7.7 – Attitudes to introduce the right to mortgage land for getting credit versus own willingness to mortgage private land for this purpose (percent of respondents)

What is your attitude towards the right to mortgage land in order to get credit?	Will you agree to mortgage your land if you cannot get the credit on other conditions?							
	Yes		No		No answer		All	
	1996	2003	1996	2003	1996	2003	1996	2003
Positive	12	28	2	3	2	2	16	33
Indifferent	3	5	5	9	4	1	12	15
Negative	2	1	38	21	6	3	46	25
Difficult to answer	1	5	11	15	15	7	27	27
Total	17	38	56	48	27	14	100	100

8. Social Sphere

Provision levels of most of the social services, which have been dramatically reduced through 1996, are still low, and in some cases even became worse (Table 8.1). Salary rise due to price increases was totally gone. Only 10% of the farmers enjoy pension augmentation relative to 25% in 1996. There is, however, a moderate increase in school and university aids, in prices of elementary goods and in medical services.

Table 8.1 – Provision of social services

	Local or state authorities		Trade unions or others		Total	
Service	1996	2003	1996	2003	1996	2003
Salary adjustment for growth of prices	39	0	0	0	40	1
Pension augmentation	25	9	0	2	26	11
Material aid for children	26	8	0	1	26	9
Preferential terms for children in preschool institutions	6	4	0	0	7	4
Preferential terms for children at school (free transportation, free breakfasts)	1	11	0	0	1	11
Grants for students	1	3	0	8	2	11
Aid in construction and repair of house/farm buildings	0	4	0	2	1	6
Fuel supply	0	5	0	5	1	10
Discounts in purchasing foodstuff	0	5	1	5	1	10
Aid in buying goods	0	3	0	3	1	6
Reductions in payments for public utilities	1	1	0	0	1	1
Medical aid (prophylactic examination, drug price reduction)	1	6	0	6	1	12
Reduction for a place in sanatorium, tourist camps	0	0	0	2	0	3
Reduction in payments for the apartment, electricity, etc.	0	0	0	3	1	3
Departmental accommodation	0	0	0	0	1	0
Transportation service	1	0	1	1	2	1

Table 8.2 presents the distribution of purchasing power among respondents. Although there is a reduction in the fraction of farmers that face difficulties in buying food, the percentage of those who can procure electrical instrument or vehicles is still about 1%.

Table 8.2 – Respondents' evaluation of the purchase power of their income

Purchase power	1996	2003
Not enough money even for food	56	40
Enough money for food and everyday needs	37	44
Enough money for everyday needs, clothes, footwear, etc.	5	15
Enough money to buy furniture, a TV set, a fridge, etc.	1	1
Enough money to buy a motorcycle, a mini-tractor, a car, etc.	1	0

About 50% of the farmers claim that their economic situation has been improved or hasn't changed during the recent 3 years (Table 8.3); this is compared to 24% that have stated so in 1996. However, farmers are less optimistic regarding the future economic situation; around 40% think that the situation will become worse, in 2003, compared to 24% in 1996.

Table 8.3 – Respondents' evaluations of economic changes in the past and future

	How your own economic situation has changed in the last 3 years?		How is your own economic situation going to change in the next 3 years?		How is the private agricultural sector going to change in the next 3 years?	
Answer	1996	2003	1996	2003	1996	2003
Better	13	24	24	18	26	16
No change	11	25	33	20	18	16
Worse	71	43	24	39	23	41
Don't know	5	8	19	24	33	27

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